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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,341	07/24/2003	Mahfuza B. Ali	57169US003	9160

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EXAMINER

PEZZUTO, HELEN LEE

ART UNIT	PAPER NUMBER
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1713

DATE MAILED: 07/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/626,341

Applicant(s)

ALI ET AL.

Examiner

Helen L. Pezzuto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 May 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-58 is/are pending in the application.
- 4a) Of the above claim(s) 8-58 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-58 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 5/8/06.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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DETAILED ACTION

Election/Restrictions

This application contains claims 8-58 drawn to an invention nonelected with traverse in reply filed on 4/14/05. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

Claims 1-7 are under consideration in this application.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by JP-4-41423 for the reasons of record(translation hereby provided)

JP-423 discloses a thermoresponsive hydrogel film derived from a water-insoluble polymer, wherein a copolymer gel membrane comprises the polymerized product of N-

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isopropylacrylamide and ethylene glycol dimethacrylate is exemplified in working examples 1 and 2. Thus, the instant copolymer containing non-terminal pendant (meth)acrylate group and copolymerized N-isopropylacrylamide is anticipated in prior art copolymer due to the presence of polyethylenically unsaturated polymerizable groups as well as polyfunctional (meth)acrylate moieties in the crosslinkable comonomers.

3. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Kaetsu et al. (US-758) for the reasons of record.

US 5,152,758 to Kaetsu et al. discloses a hydrogel produced by alkali hydrolysis of a copolymer comprising 100 parts by weight of N-isopropylacrylamide, 5 to 50 parts by weight of an ionic monomer and 2-15 parts by weight of a crosslinking agent (col. 3, lines 18-45). Suitable crosslinking agents include polyfunctional dimethacrylates. Example 1 shows a hydrogel containing 5 wt% diethylene glycol dimethacrylate. Hence, anticipating the present claims.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaetsu et al. (US-758) for the reasons set forth in the preceding paragraph and further in view of the following remarks.

As stated, US-758 teaches 2-15 parts by weight of polyfunctional dimethacrylates as suitable crosslinking comonomer. Though not exemplified, 15 parts by weight of said crosslinking comonomer would result in an upper limit in excess of 10 wt% non-terminal pendant unsaturated (meth)acrylate expressed in the present claims. The limitation of having at least three ethylenically unsaturated pendant (meth)acrylate groups expressed in claims 6-7 would be obvious and readily envisaged in view of prior art disclosure of using 2-15 parts by weight of the dimethacrylate crosslinking comonomers, absent of unexpected and/or unusual results.

6. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al. (US-930) or Meier et al. (US-946) or Kazakov et al. (US-455) for the reasons of record.

US 4,732,930 to Tanaka et al. discloses an ionic gel obtained by polymerization of isopropylacrylamide in the presence of an ion-containing monomer, and a crosslinking agent (abstract). Suitable crosslinking agents include ethylene glycol dimethacrylate and glycerine triacrylate (col. 2, line 67 to col. 3, line 10). The presently claimed reactive polymer would be formed as taught. Prior art discloses using 0.3 to 3 mol% of the crosslinking agent, but not limited by the mol% disclosed.

Similarly, US 2003/0044455 A1 discloses a process of preparing polymer nanogel derived from polymers and copolymers of N-isopropylacrylamide, wherein crosslinking comonomers may be incorporated (page 4, [0050]; page 5, [0063]-[0064]). Suitable crosslinking agents include multifunctional di(meth)acrylates and triacrylate. The instant reactive polymer would be expected to be formed during the polymerization as taught in prior art disclosure.

US 6,616,946 B1 to Meier et al. discloses stimulus responsive block copolymer hollow particle delivery system, comprising amphiphilic triblock ABA or BAB copolymer (abstract). Dual or multi stimuli responsive polymers are taught to be within the scope of prior art delivery system,

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inclusive of N-isopropyl acrylamide copolymers (col. 5, lines 19-28; col. 7, lines 46-61; col. 12, lines 59-62). Suitable hydrophobic segment B in the amphiphilic copolymer include polybutadiene (col. 9, lines 29-39) which would correspond to the instant requirement of pendant ethylenically unsaturated group. Furthermore, prior art teaches introducing polymerizable groups at the end or pendent position in the growing segment (col. 12, line 59 to col. 13, line 19). Still further, crosslinking agents such as multifunctional (meth)acrylates in an amount of 20-0.05 wt% are also suggested (col. 13, line 50 to col. 14, line 13), thus, further meeting the instant reactive polymer limitations.

Prior art discussed do not expressively exemplify every embodiments of the instant reactive polymer, but do, however disclose their production. Accordingly, it would have been obvious to one skilled in the art to select N-isopropylacrylamide copolymerize with the suitable multifunctional comonomers and crosslinking monomers, motivated by the reasonable expectation of success. Once the combination of components is suggested, the discovery of optimum or workable ranges of these components involves

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only routine skill in the art. Thus, rendering obvious the present claims.

Response to Arguments

Applicant's remarks filed on 5/8/06 have been fully considered but are not found to be persuasive. The crux of applicant's argument lies in the lack of suggestion that the inclusion of polyfunctional (meth)acrylate crosslinkable comonomers in a free radical polymerization necessarily results in a pendant ethylenically unsaturated group, such as a (meth)acrylate group as presently claimed. Due to the presence of multiple unsaturated polymerizable functionalities (i.e. two double bonds), as well as the presence of polyfunctional (meth)acrylate moieties in crosslinkable monomers disclosed, the recited copolymerized product is anticipated and expected as one of products formed during the polymerization reaction, dependent on the relative reactivity of the monomers in the copolymerization reaction. Accordingly, the examiner's position is maintained.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this

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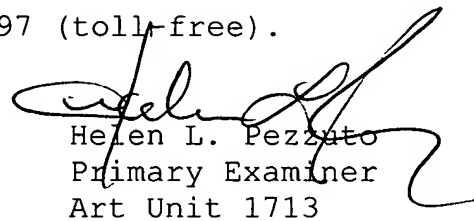
action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Helen L. Pezzuto whose telephone number is (571) 272-1108. The examiner can normally be reached on 8 AM to 4 PM, Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Helen L. Pezzato
Primary Examiner
Art Unit 1713

hlp